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The Canadian Medical Review

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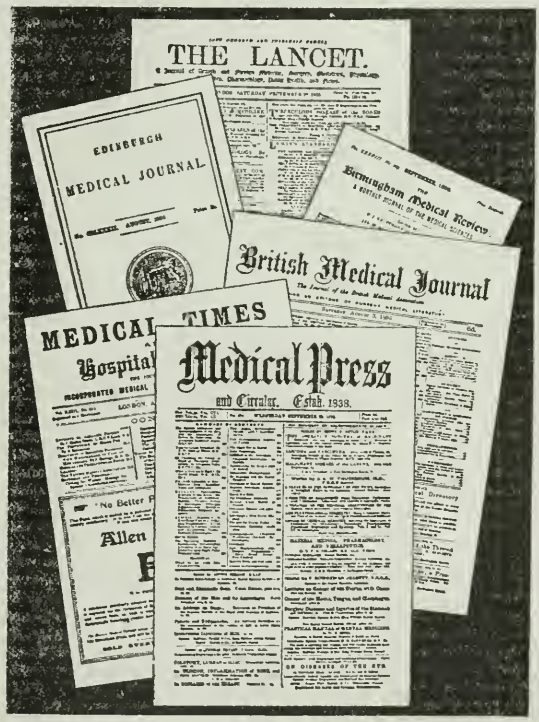

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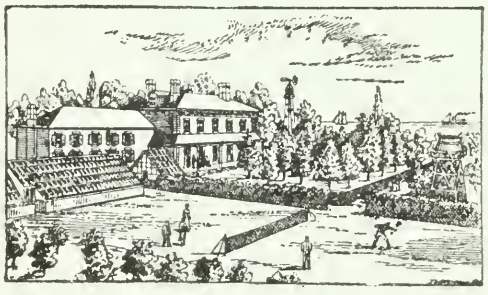

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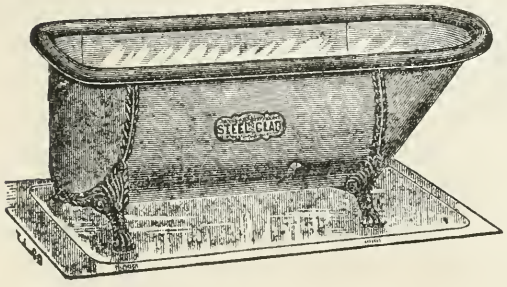

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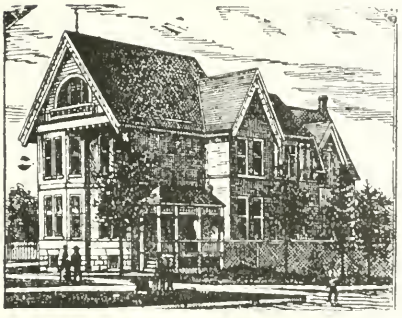

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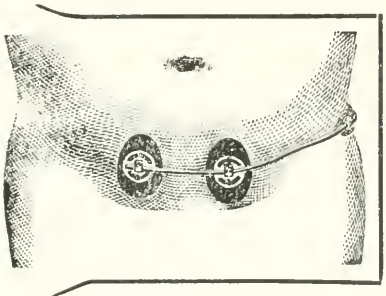

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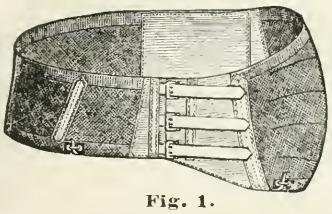

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Physician to Hospital for Sick Children.

VOL. II.] TORONTO, NOVEMBER, 1895. No. 5

Original Communications.

Some Proposed Changes in the Militia Medical Service.

BY W. TOBIN, F.R.C.S.G.,

Deputy Surgeon-General, Canadian Militia.

[Paper read before the late meeting of the Canadian Medical Association, held at Kingston, Ont., and recommended by a resolution of that Society to be published in the press and a copy to be forwarded to the Militia Medical Department.]

GENTLEMEN,—I fear that the subject of my paper will not appeal to the sympathy of a large number of those present, unconnected with the militia medical service; but I count upon your kind attention and support nevertheless, knowing that neither is ever wanting to those seeking honestly to effect improvement in any branch of our profession. The same subject has been lately discussed at a meeting of the Maritime Medical Association, held at Halifax, N.S., in July last, when Dr. Farrell, whose brilliant paper you heard read last night, and whom we from the Maritime Provinces are proud to find occupying such a prominent position at this gathering, in the course of his presidential address dwelt largely on "the incomplete organization of the medical department of our militia."

"The Militia Department of Canada," he stated, "costs us a great deal of money, and the people willingly grant what appears to them

to be a large sum of money, feeling that a military force for our protection and defence is a necessary part of our national existence. It is the duty of every nation to be prepared for the terrible emergency of war. To be prepared for action is the *raison d' etre* of the existence of a militia. 'Ever ready' in every department when the time of action comes should be the aim of a well-organized force. It is for this object that the country spends its money and our young men give their time and energy to assist the work. To be prepared, each part of the system should be a perfect organization in itself. The medical department I will not speak of as being poorly organized—it is hardly organized at all. The medical department is a most necessary part of the service in the field, and if every other part of the system gets proper attention, this service should not be neglected. I will urge, again and again, that the medical department of our militia should receive more attention and be put in proper shape."

The doctor then went on to say that the ordinary training of a general practitioner is not sufficient for a military surgeon ; that the present plan of medical organization is old-fashioned and not in touch with modern military science, and he concluded by recommending a reformation of the system and the establishment of chairs of military surgery in the different medical schools throughout the Dominion.

In replying to Dr. Farrell's caustic criticism of the department, I was much pleased to be able to point out to him and to the meeting what had lately been done and what had been suggested for improving the militia medical service. I could only deal with the suggestions offered by myself, being ignorant of the labors of others—perhaps more competent than I am—to inaugurate adequate reforms.

The following changes, at different times, had been submitted to the Ministers of Militia and Defence :

(1) The reorganization of the service on a departmental—in lieu of the present, the regimental—system.

(2) The formation of a reserve corps of medical officers on the same basis as that of the British army medical service.

(3) The perfection of the ambulance system by the formation of bearer companies to give "first aid" and transport to the sick and wounded in war.

In discussing the question of reorganization, I informed the meeting and the committee subsequently appointed to deal with the matter, that I had had exceptional facilities for becoming acquainted with the relative merits of the departmental and regimental systems, as I had had personal experience of each, in the Queen's service and the Canadian militia, both at home and abroad.

I had served in India and at home both as a regimental assistant surgeon (in the 24th Regt.) and as a surgeon in the Army Medical Department. Being in Canada in 1885, I had volunteered and joined the Halifax Provisional Battalion on the breaking out of the North-west troubles, and had served during the campaign in medical charge of that corps. During that campaign I found the regimental medical system as defective in the North-west as it has ever proved itself elsewhere. So defective was it, as far as my own personal experience went, that I was prompted to expose its deficiencies in a letter, over my own signature, which appeared in a service paper, *The Canadian Militia Gazette*, then being published in Montreal. The date of the issue was the 2nd June, 1885.

To publish such a letter at the time was undoubtedly a breach of military discipline which only a disinterested desire for improvement in the service could or should condone.

Here is a copy of that letter:

"THE CAMP, MEDICINE HAT,
"21st May, 1885.

"*To the Editor of the Canadian Militia Gazette.*

"DEAR SIR,—I should think it would be of interest at present to medical officers serving with the troops at the front and throughout the Dominion, if you would devote a space in your columns to a discussion of the relative merits of the regimental and departmental medical systems. As an army surgeon of some ten years service. I have had in my time experience of both. My experience as a militia surgeon dates only from the beginning of the present campaign. I have had, therefore, no opportunity of ascertaining the views of my militia confreres on this subject, but I think the present time opportune and the column as appropriate for this discussion. At all events, I have no doubt but that this campaign will have opened the eyes of most of us to the necessity of reorganization. Should this take the form of the departmental system now prevailing in the British service? It has been found in war time that the purely regimental system is a failure. Has it not proved so on the present occasion? Of course our regimental hospitals have not been properly equipped as such, nor have our field hospitals (such as I have seen of them at least) been put on a proper footing. But would not a well-organized departmental service have been more efficient, more movable and cheaper than the present one? With a Surgeon-General at Ottawa, as head of the department, one Deputy Surgeon-General for each Province with a suitable staff of surgeons-major and surgeons under him (transferable on duty, as required, from one point to another within the Province, from one corps to another, and available for home and foreign service), we would have a simple, cheap and readily movable staff, possessing more authority, independence and *esprit de corps* than can ever be obtained under the present system. I only throw out these ideas,

hoping to obtain a ventilation of the subject, and having nothing but agreeable reminiscences of both systems whilst in the Queen's service, I consider myself as quite unprejudiced in the matter.

(Signed) "W. Tobin,
"*Surgeon, Halifax Provisional Batt.*"

The following was definitely the reorganization I proposed, viz., a modified departmental system :

1. A Surgeon General (at Ottawa).

2. Two Deputy Surgeons-General (one to act as statistical officer, the other as purveyor of medical stores, etc., the second a position which my friend, the Hon. Dr. Sullivan, filled so efficiently during the North-west rebellion).

3. A Principal Medical Officer for each military district, who should take medical charge of that district and have complete control of its medical equipment.

4. A sufficient staff of surgeons-major and surgeons for each district, so many per head of the active militia.

It was recommended that the present regimental medical officers should be permitted to retain their positions and continue to wear the uniform of their respective corps, but newly appointed officers should be gazetted to the department and not be permanently attached to any corps.

All medical officers should be under the orders of the P.M.O. for the district. The P.M.O. should correspond directly with the Surgeon-General.

The Surgeon-General to be responsible to the officer commanding the militia in chief and to the Minister of Militia.

Such a militia medical department, subject to its own responsible medical officers, would prove more efficient and more economical than the present antiquated and cumbersome regimental system, which has been abandoned in the British service since 1872, as I had mentioned in my letter to the press.

In this scheme for reorganization, I did not enter—nor do I propose to do so now—into the details of the duties of each medical officer. Those duties are clearly defined in the official regulations of the Army Medical Department. This is merely the skeleton of a scheme, the details of which may be worked out later on ; and, should the exigencies of the service permit and no political complications hamper, I have hopes of seeing some such scheme eventually adopted —whether at my suggestion or another's, whether it be my plan or another's, is immaterial. A reorganization of the medical service is urgently needed, and this, apart from personal or political considerations, is what we, as medical men, should aim at.

I have also proposed the formation of a reserve corps of medical officers, somewhat on the basis of that of the British service. All medical officers under sixty years of age, of good health and physique, and whose previous service had been found satisfactory, might voluntarily, and at any stage of their service, be placed on the reserve list. They would be liable to be called upon to serve again either in peace (optional) or in war time. In this way the services of such men as Sullivan, Roddick, Bell, Douglas (late 24th), Cameron, Kerr (late of Winnipeg), Elder, Shepheard and others need not be permanently lost to the department. They might receive a step in honorary rank on transfer to the reserve list and be compulsorily retired after sixty-five years of age.

The formation of such a reserve list is possible even under the existing (regimental) system; and if, for any reason, it is thought inadvisable to alter that system at present, that need be no bar to its inauguration. The reserve bill would constitute a *corps d'elite* of retired medical officers. It would (in times of peace) cost the country nothing (an important consideration) and would afford a graceful recognition on the part of the Government of previous good service. On emergency, its members would form a part of the medical departments ready to take their share of duty with troops at the base or in the field, and preferably in military hospitals, where their previous experience, military and civil, would be invaluable.

I had, at the same time, much pleasure in informing the meeting in Halifax that, of late years, improvements had been made in the regimental ambulance system there. Select classes have been instructed in "first aid to the injured," under the officers of the St. John Ambulance Society, in which society Surgeon-Major Lees Hall, of the Army Medical Staff, and Dr. Carleton Jones, of Halifax, are zealous workers. Both these gentlemen had volunteered their assistance as instructors to the militia. In this work, however, I am sorry to say, there has been a falling-off of late on the part of the men.

As regards the formation of chairs of military surgery, suggested in Dr. Farrell's address, I was able to inform the author that the plan had already been tried in Great Britain (after the Crimean war) and had not proved a success. Such a chair had, for instance, been established and was occupied by the late Surgeon Tuffnell, in the Royal College of Surgeons in Ireland, but was soon abandoned.

So much, I was able to point out, in answer to Dr. Farrell, had been suggested in the way of reorganization of the militia medical service, and something, in fact, has already been done, for at stations where permanent militia corps are established the medical service is worked

rather on a departmental than a regimental basis. To attempt a complete change may be considered premature, as it would certainly be unpopular, at present. We know the heart-burnings that ensued on a similar change being decreed in Her Majesty's service—but there can be no doubt, nevertheless, that however socially agreeable to individual officers, the regimental system on service has always failed, and always will prove an utter failure. It stands condemned, and must go if our branch of the service is ever to be made effective.

The idea of forming a proper reserve list appears to meet with more general and official approval. I have been asked to elaborate the plan and furnish details, but at present I consider a modification of our defective ambulance system and the formation of "bearer companies" (at least in Halifax, which is exceptionally situated), of more pressing importance. This was also the view taken by the general meeting in Halifax, and by the committee appointed to deal with the whole subject.

The following resolution was the outcome of the discussion :

"*Resolved*, That it is desirable that militia medical officers should receive such instruction in military surgery, ambulance drill and the routine of military medical administration generally as will enable them to discharge satisfactorily their duties in the field, in camp and in military hospitals. It is desirable that bearer companies should be formed wherever possible in localities where several regiments are brigaded together ; that the officers and men of these companies should receive instruction in stretcher drill, in ambulance work and in giving 'first aid' to the wounded ; that each bearer company should be provided with a proper supply of medicines, surgical appliances and ambulance furniture to enable officers and men to learn their duties practically and to prepare them to carry them out on emergency.'

This resolution was drawn up by the committee, was presented to the full meeting and discussed, and was passed with a recommendation that it be forwarded to the Department. The part of the resolution dealing with the formation of bearer companies in connection with our militia forces attracted particular attention, and elicited amongst others the following remarks in support from Surgeon-Colonel O'Dwyer, P.M.O. of Her Majesty's forces in Canada :

"It is considered desirable generally that bearer companies should be formed in connection with modern armies, (*a*) because all Christian nations now employ them in war ; (*b*) because a bearer company, properly organized, saves much suffering to the wounded, and in many instances, by timely and skilled assistance, prevents loss of life in the field by bleeding, with which the medical officers available would be

unable unassisted to deal. In these days of quick-firing rifles and machine guns, the knowledge of a soldier that prompt and suitable measures are at hand for treating him when wounded improves his *morale* as a fighting unit. Nothing more depresses an army than to be aware that assistance will not attend them when struck down."

The duties of a bearer company, I may mention, consist in giving what is known as first aid to the wounded, and in removing them promptly and properly from the field of battle. To perform these duties efficiently they require a course of special instruction in such elementary anatomy and surgery as will enable them to arrest hæmorrhage, apply splints to fractured limbs, etc., and a course of stretcher drill to teach them how to handle the wounded without aggravating their injuries and remove carefully to a dressing station. No militia or volunteer force is now considered effective in Great Britain without having attached to it such a bearer company, which is quite distinct from the regimental bearer organization.

Its formation need involve no loss of strength to the corps it is formed from. The men may remain attached to their respective regiments for purposes of discipline, drill, etc. In any case in time of war or mobilization a similar number of men for similar duties (*vide* Queen's Regulations) would be called for from each regiment in the field, with this important difference, that the men then handed over to the medical officers as bearers would be untrained and, perhaps, unreliable; whereas, should the bearer company system be adopted the medical officers would have under their control a body of trained men, competent and experienced to give every assistance to the injured and remove them safely from the scene of action.

The men of the bearer companies should be selected preferably from those who are already proficient in their ordinary duties, and, when possible, from those who have already undergone a course of instruction in first aid to the injured, as some of our militia men in Halifax have done. They would continue to wear the uniform of their regiment, and to serve with it; but would be liable to be detached when doing duty with the bearer company, and would parade under the medical officers of that company.

The men of the bearer company, when formed, should receive some distinctive badge, such as the Geneva Cross, as might be determined by the Dominion Government.

In addition to the professional instruction in first aid to the wounded which might always be given by their own regimental medical officers, they would require a course of stretcher drill under a competent instructor.

In Halifax, should sanction be given to form such a bearer company, or half-company (which will be sufficient for local purposes), we propose applying to the general officer commanding in Canada to appoint such an instructor from the Army Medical Staff Corps. This instructor will receive adequate recompense, the expense to be borne out of local regimental funds. His services would only be required long enough to teach the medical officers, non-commissioned officers and men their stretcher drill. Afterwards, the medical officers so taught would be able to teach the stretcher drill themselves with the aid of the regulation text-book, "The Manual for the Medical Staff Corps," a copy of which should be in the possession of every medical officer.

In Halifax we are exceptionally well placed, having a complete staff of the Army Hospital Corps to copy. In addition, we are fortunate in having the Principal Medical Officer of the Imperial forces in Canada, Surgeon-Colonel O'Dwyer, with us, ever ready to give us the benefit of his great experience in military medical matters. Surgeon-Colonel O'Dwyer has organized similar bearer companies in connection with the militia and volunteer forces in Great Britain and commanded a bearer column during the late Egyptian compaign. I am delighted to see him present here to-day and hope he will favor us with some practical remarks.

This scheme for the formation of a bearer half-company in Halifax has gone through the proper channel to Ottawa, and as it involves no expense to the Government and is urgently required, and in the words of the local Deputy-Adjutant General, is considered "a practical scheme for a very necessary purpose," it is to be hoped it may meet with favorable consideration, and may prove the initiatory step in the direction of a complete and effective reorganization, such as I have outlined, of the whole militia medical service.

I will only add a few words to this purely technical paper, in order to thank the Hon. Mr. Daly (our present Governor of Nova Scotia and late M.P. for the city of Halifax), and his successor in Parliament, my friend, Mr. Thomas Kenny (who has always shown the greatest interest in militia matters), for the kind assistance they have at various times given me in bringing these views on service matters before the heads of the Department; and also my thanks to the present and various Ministers of Militia and Defence (Sir A. Caron, Hon. Mr. Patterson and Hon. Mr. Dickey) for the invariable courtesy they have displayed when I have had occasion personally to discuss these matters with them.

ADDENDA.

Details of the medical *personnel* of a half-bearer company: Two medical officers, one staff-sergeant, three sergeants, three corporals, twenty-three privates (including officers' servants and a batman for the senior non-commissioned officer); total, thirty-two.

In Halifax the medical officers are obtainable from the city corps, which have two each, a surgeon and assistant-surgeon. The men have been promised (ten from each of the city corps—H.G.A., 63rd and 66th Battalions) by the officers commanding, who warmly endorse the project, as do also the medical officers of the three corps. We await only the sanction of Government to organize, and as the plan involves no expense to Government, fail to see why there need be any delay about getting it.

Cocaine in Urethral Surgery.—Any surgeon having much to do with urethral surgery has noticed in some very modest and nervous patients the extreme prostration from shock on passing any instrument into the urethral canal, and much greater is this shock in these nervous patients after passing a urethrotome, even though the cutting has been very slight and no pain has been experienced. This I have noticed many times. I have used injections of cocaine in the urethra hundreds of times, but I have never but once observed any symptoms which I could absolutely lay to the cocaine. I have, however, never but once used a ten per cent. solution. Two cubic centimetres of a two per cent. solution is amply strong enough for the relief of pain in deep urethral operations, while in cases of internal urethrotomy of the distal end of the penile urethra not deeper than three inches I use a four per cent. solution. In both cases the strength of the solution is ample to completely anæsthetize the urethra. The solution should not remain in the deep urethra longer than seven minutes at the utmost. Usually five minutes is long enough, while in the distal penile portion it will require seven to ten minutes to completely anæsthetize this portion of the urethra. It should be seen that the urethra is completely emptied of the cocaine solution by stripping it, so that there is no further or prolonged absorption. By observing these simple rules, and by using weak solutions, I have never since encountered nor seen any alarming or poisoning symptoms from the use of cocaine.—Dr. W. H. Dukeman, *N. Y. Med. Jour.*

Clinical Notes.

Multilocular Ovarian Cystic Tumor.

BY DR. ALBERT A. MACDONALD, TORONTO.

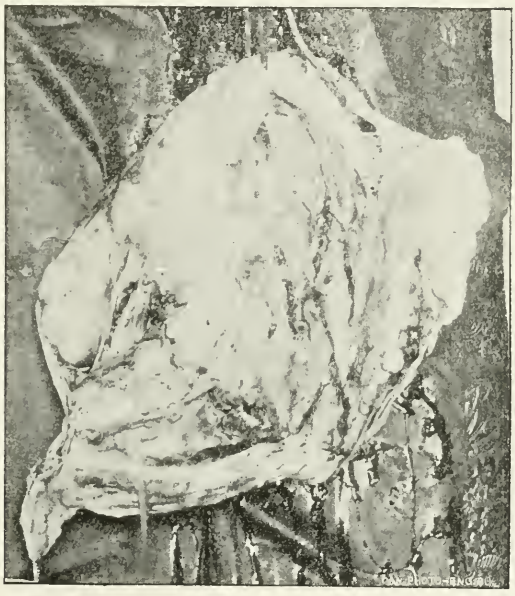
Mrs. C——, referred to me in August by Dr. F. Cowan. She is a well developed woman with good family history, aged 27. Has had two living children and one miscarriage, which took place in February, 1895. Since that time she has menstruated irregularly every two or three weeks; the discharge has been normal in quantity, color and consistency. For the past five months she has noticed a gradual median abdominal enlargement to about the size of a five months' pregnancy; general health unimpaired. On examination the tumor was found to extend three inches higher than the umbilicus; there was

Back of tumor, showing X tube and its fimbriated extremity.

dullness in the right flank, resonance in the left. The tumor was rounded and hard, lying in front of the uterus, and extending above it. The uterus, apparently normal in size, could be moved separately from the tumor, which had a firm feeling; was not tender on pressure, and had given rise to very little pain at any time.

Diagnosis, ovarian multilocular cystic tumor. Operation advised at the earliest date possible. At Bellevue House, August 10th, 1895, I

opened the abdomen by a median incision and found my diagnosis verified. The tumor, a large multilocular cyst of right ovary (photographs of which I show), occupied the whole of the pelvic cavity and extended up into the abdomen, part of it lying under the right tobe of the liver. I had to break up a number of the cysts before the tumor could be lifted from the abdomen, though the incision was enlarged, both upwards and downwards. There were no adhesions. The pedicle was tied close to the tumor, cut off and dropped. The abdominal wound was closed by silk worm sutures. The bowels were moved on the third day. The recovery was uneventful.



Front of tumor.

A point worthy of mention is that the patient was not ill in any way. Thinking herself pregnant, even though she was menstruating, she did not consult her physician until a few days before I saw her. He then recognized the condition and sought consultation.

The course and results of ovarian tumors when left untreated cannot now be studied, as the cases are recognized at an early date. In this case the growth was rapid, for there was no tumor present when she had the miscarriage in February. And if she had suspected anything but pregnancy earlier advice would have been sought and an operation would have relieved her when the tumor was small.

The Doctorate and the Military Law.

BY DR. SPRAGUE, STIRLING, ONT.

[Translated from *Annales de Medicine Scientifique et Pratique*, Paris, June, 1895.

THE Board or Chambre has just discussed, not without warmth, and adopted a text already voted to the Senate, a text that modifies Article 24 of the law of the 15th July, 1889, which establishes the military obligations of students, candidates for a doctorate. As is well known, Article 24 requires that young men who are preparing for a doctorate in either medicine, pharmacy, or law should have obtained their degree of doctor at the age of twenty-six, under penalty of going, at this age, to finish under the flag the three years of military service, of which otherwise they would be subjected to only one year.

The house-surgeons of the hospitals, although not doctors, have, alone, the right to pass their twenty-sixth year without obtaining their doctorate, and the military law does not affect them until the end of their *internat*; but that is under this condition, that they should have been called before a faculty, and in a city where there is a Faculty of Medicine.

Now, since the 31st July, 1893, a rule, of which the application commenced at the beginning of the present school year, requires young men who wish to devote themselves to the study of medicine to be holders of two bachelorships and, in addition, of a certificate testifying to the regular attendance of a course of lectures of a Faculty of ience for a year, this course being ended by an examination of which the certificate shall render account. The druggists must serve three years' apprenticeship in a laboratory added to three years of school with twelve terms. Now, it is generally believed that the twelve terms require four years. That makes seven years for the druggists, besides the year of military service. Thus if the young druggist leaves school at the age of nineteen he cannot, before twenty-seven years, arrive at his nomination of druggist of the first class.

The medical students are, perhaps, even more sure of being forced by the military law. The medical studies, according to M. Bronardel, demand seven years; the year of service added makes eight years. If the young aspiring doctor has not commenced at the age of eighteen or has not had the chance of being named as house-surgeon, he cannot escape the extra military service.

Such is the question. It was almost useless to repeat it, it having been already determined. Despite that they had, at the Board, a long discussion, sometimes picturesque; the Commission, represented

by M. Le H——, was in favor of granting the extra year voted by the Senate, granting the student until the age of twenty-seven to obtain his doctorate without being forced to two extra years of military service.

M. L——, who was indeed in the debate, and who declared it haughtily, supported this necessity of correcting an error in calculation between a law of 1889 and a rule of 1893.

General Zurlinden, who is surely interested by the recruiting, being Minister of War, declared that the Government was in favor of the modification. He declared that the military organization had not compromised itself at all, for now the young men should enter the service at the age of twenty-seven years instead of twenty-six (I take this as a sarcastic joke) if, as one might say in the military phrase, he fails the (some pun that loses its force in our language?) doctorate.

The Minister of Public Instruction approved, once more, in the name of the Government, of an additional year. "It is decided, then?" "Not at all: the Board wishes to make some changes."

M. Georges Berry asked if the extra year was also given to candidates for licentiates in law. M. Reil replied that the Board refused M. Mirman's reprieve, not for being merely medical doctor, but for exercising his commission of deputy. He complained of inequality, declaring that the preparation for a commercial career is quite as intricate as that of a medical career. And M. Jourde followed M. Reil on this ground of equal claims.

And it is not yet ended. The deputies of cities containing schools of medicine asked that the *internat* for their *internes* named at a gathering, give to them the same privileges as are granted to cities containing a faculty.

Then noon came; and then the whole south arises. M. Bouge foretold the instant transfer of the Faculty of Aix to Marseilles so as to change the school of M——— into a faculty. But M. M———, President of the Commission of the Army, interfered, and the amendment of M. Bouge was not voted.

"The law is adopted," said the *Journal Officiel.* The doctors of the future have, then, an extra year, before running the risk of returning a second time, and two long years to terminate an interrupted "military career."

Society Reports.

Toronto Clinical Society.

THE twenty-fifth regular meeting of the Toronto Clinical Society was held in St. George's Hall, Elm street, October 9th, 1895.

Dr. J. E. GRAHAM occupied the chair and read his inaugural address.

He said he felt it an especial honor to be chosen as president of a society which had for its object the study of the clinical subject of disease. The most useful information was that acquired at the bedside. All due credit must be given to the bacteriologist and the pathological histologist for all the light they may throw on the subject of disease as the result of their labors, but we must not underrate the knowledge acquired from observation at the bedside and from a careful examination of the gross appearance of the organs on the post mortem table.

In a review of the history of medicine during the century that was closing, several eras could be noted. The first might be termed the clinical era, that in which Laennec, Bright and Addison flourished. In our practice to-day we probably owe as much to these observers as to those of more recent date. Laennec's work on stethoscopy was a finished work. The modern stethoscopist had added very little in this department, while some valuable hints of Laennec's had been forgotten. They had few instruments of precision, yet so accurate were their observations and so careful their reasoning that the results achieved have stood the criticism of hundreds of observers and stand as facts to-day.

A second era was that of the morbid anatomist, represented by Rokitansky and Virchow. From this period the microscope dated its pre-eminence. In clinical medicine the thermometer was introduced. In 1871, the essayist said he had the privilege of attending Rokitansky's lectures. He was not a popular lecturer and his classes were small. His work, however, was still standard and had helped to form the ground-work of our morbid anatomy. Reference was then made to the great work of Virchow on Cellular Pathology. The work of these distinguished men was being carried on by their disciples, Conheim, Von Recklinghausen and others.

The next era was that of bacteriology, commencing between the years 1875 and 1880, when Pasteur made his discoveries in this department. But it was not until 1882, when Koch discovered the tubercular bacillus, that the profession first became interested in this branch of

science. Since then it has undergone most rapid development. Following the isolation of micro-organisms, pathological and benign, the attention of scientists had turned to the study of the toxines produced by the bacteria. Many pathological processes originally ascribed directly to the bacteria were now shown to be caused by those toxines.

During the past ten years the attention of investigators had been turned to the study of the symptoms of the patient during life. Now they were aided with many instruments of precision. A more elaborate analysis of the secretions and the excretions of the body during health and disease could now be made. Bouchard was prominent in this line of study. The essayist referred to the work being done in Johns Hopkins in this department. The attention paid to examination of the blood and the urine was commented upon ; the careful analysis of these would assist very materially both in the etiology and the treatment. It was to be remembered that diseased organs changed after death. As an example the speaker referred to the disappearance of an eczema after death. The great advancement of the future would be made in the study of pathogeny rather than of morbid anatomy.

The essayist then spoke of the value of photography in the study of disease. He advanced the opinion that if the phonograph could be applied to the registering of heart sounds it would be of great service in the study of cardiac diseases. There were many abnormal heart sounds, apart from murmurs, which had not yet been definitely described, but which indicated an abnormal condition of the organ.

Much careful study was required yet in the study of the animal fluids. Much of the present study of them was a mere matter of routine. The analysis of these must be pushed still further.

Dr. Graham then alluded to some recent advances in the line of treatment of disease. Treatment by serum therapy had been successful in diphtheria and tetanus. Animal extracts were now a recognized form of treatment. The thyroid extract had become an established means of treatment of myxœdema. An embrologist had made the remark to him the other day, how difficult it was for the physician to attempt the cure of disease when so little was positively known of the very foundations of life, of cell development and cell growth. His reply was that there were human beings ill all about us who must be attended to in the best manner known to us. Treatment could not be deferred until the physiologist had explained the phenomenon of existence.

A Case of Abdominal Aneurism.—Dr. A. A. Macdonald read a paper containing the history of a case of abdominal aneurism. The patient was a man aged 48, always strong and healthy. He was a

railroad man and his work had been that of a heavy nature. About two years ago he noticed, after a heavy lift, a pain in the abdomen. He thought it was a strain caused by the lifting. His physician was unable to tell what was the matter. Some time after this he noticed a lump on a level with and to the left of the umbilicus. He had some pain in this lump but it was not severe. Shortly after this Dr. Macdonald was called to see him. He was then suffering from cough the result of bronchial irritation; he had diarrhœa and vomiting and was losing flesh rapidly. The vomiting was a marked feature. At that time the pain was noted a little below the region of the pylorus. So marked was the condition that it was considered, possibly, cancer of the pylorus. The tumor was not movable, it was hard and rounded. The diagnosis was unsatisfactory. Patient was advised to enter the hospital and have an exploratory incision made. The patient was very anxious to know if a cure could be promised; he was answered in the negative. The operation was not urged. The patient decided to wait. The diarrhœa became dysenteric in character, and was not easily checked by the ordinary remedies. Urinary analysis, negative. Ascites followed to such an extent that the lump could not be reached by palpation. About this time Dr. Baines was given charge of the case.

Dr. Baines said he saw the case on the 22nd August. The patient was suffering from dyspnœa, anasarca and marked ascites. Calomel and magnesium sulphate were freely given, causing three or four motions in the twenty-four hours. Nitro-glycerine and digitalis were administered. A week after he entered the hospital he was tapped and eighty-four ounces of fluid drawn from the peritoneal cavity. This relieved him a good deal for the time being. There was at this time a very slight trace of albumen in the urine. On September 5th he was put on Guy's pills, one every four hours. On September 15th he was tapped a second time and 134 ounces drawn off. This relieved him again for a few days. September 25th he was obliged to take to his bed, which he had not done up till this time in the hospital. His neck was markedly swollen. The throat was examined and œdema of the glottis was detected. In a few hours the man died.

Dr. Baines said that he had had the patient admitted to the hospital with the idea that cirrhosis of the liver was present, although many of the clinical signs were wanting; there was no jaundice nor any marked tenderness over the liver. He had not known of the lump previously; he had not noticed it when examining the abdomen. The walls were thick with layers of fat, and this with the œdematous condition made it impossible to detect any tumor in the cavity. The

pulse was small, rapid and dicrotic. The diagnosis rested between cancer and cirrhosis.

Dr. H. B. ANDERSON reported on the pathological condition found. There was great general anasarca; there was effusion into the serous cavities—the pleura, the pericardium and the peritoneum. There was marked hypertrophy of the heart. The lungs were markedly emphysematous; the liver was congested; the kidneys were also congested and the capsule adherent to a certain extent. The surface of the kidney was rough and there were some small cysts beneath the capsule; the intestines were normal. The aorta was markedly atheromatous with calcification. An aneurism was found at the site of the superior mesenteric artery; it was about four inches in its long diameter and three inches across, being oval in shape. Laminated clots filled the superior mesenteric so as to completely occlude it. The remote portion of the artery had dwindled into a fibrous cord; the aneurism had not made pressure posteriorily; it had pressed forward and was firmly adherent to the head of the pancreas, which organ it had shoved upward, causing pressure, which was exerted on the structures in the portal fissure. The mesenteric artery did not seem to be enlarged. A microscopic examination of the kidneys showed an increase in the interstitial connective tissue and a hyaline condition of the glomeruli. The collateral circulation could have been carried on through the pancreatico-duodenalis superior from the hepatic anastomosing with the pancreatico-duodenalis inferior from the superior mesenteric, besides by the colica media of the superior mesenteric anastomosing with the colica sinistra branch of the inferior mesenteric.

Dr. MACFARLANE asked if any bruit was heard when the case was first examined.

Dr. MACDONALD replied that there was none in front; he had not listened at the back as he had not suspected aneurism.

Dr. GRASETT said it was not clear to him how collateral circulation was kept up.

Dr. MACFARLANE said that he failed to see how the collateral circulation was carried on, as the aneurism seemed to be a healed one and completely occluded the aorta.

Dr. ANDERSON pointed out that the lumen was not completely closed.

Dr. MEYERS read an interesting account of a recent visit he had made to Lourdes.

Metrorrhagia Cured by Ovariotomy.—Dr. BINGHAM reported the history of a case of metrorrhagia cured by ovariotomy. The patient was referred to him by Dr. M—— July 15th, 1894. The patient was the mother of two children, the youngest of whom was ten. For nine

years she had been a sufferer from menorrhagia. She flooded for about fifteen days out of each month, during which time she was bed-fast. She lost enormous quantities of blood. She was very bad during the past five years, having to keep in bed most of the time. When she came to the city for treatment by him she was exceedingly feeble, was much emaciated and complained of a very great deal of pain in the back and down the thighs, showing that there was pressure on the sacral plexus. Altogether she was in a very bad condition. On examining the uterus nothing was found to account for the severe hæmorrhages in the way of local tumors or myomatous masses, except some small bean-like masses in the broad ligament. The uterus itself was very large and flabby and was movable. She was put in St. John's Hospital. He considered it a case for electrical treatment, thinking that if electricity would do any good it should in a case like this, being a case apparently of simple involution with great prostration and anæmia. Electrical treatment was persisted in for eight months. At the end of that time her condition, as far as the loss of blood was concerned, was not improved. Her general health, however, was improved. Thorough treatment by currettement and tamponage and the other routine treatment having been previously tried without any improvement, the woman in March, 1895, consented to undergo radical treatment for the cure of the condition. The operation was a simple one. The right ovary had connected with it a cyst, the left was normal. The uterus was as large as one would expect to find it in the third month of pregnancy. It was flabby, soft and congested. The principal point in connection with the operation was the difficulty of controlling the oozing. It was afterward learned that the woman was a subject of hæmophilia. For years after the slightest scratch on the hand the bleeding was very difficult to check. It took three-quarters of an hour to control the bleeding of the stump and from the fundus itself where there had been some adhesions. A drainage tube was inserted and the wound closed in the usual way. The tube was pumped out every fifteen minutes for several hours. The wound healed by first intention. The patient made an uneventful recovery. She was now able to attend to her household duties. The speaker said he would like to know why the electricity failed to help the case.

Dr. A. A. Macdonald said his opinion was that the benefit from the use of the electricity was due to its astringent and escharotic action on the uterine mucous membrane, but that it would have no effect on curing the ovarian condition.

Dr. Baines said that he had found electricity very beneficial in these cases. The society then adjourned.

Toronto Medical Society.

The regular meeting of the society was held on the 24th October in the Council Buildings, President W. H. Oldright in the chair.

Diphtheria in an Infant.—Dr. W. J. Wilson reported a case in practice—diphtheria in an infant one day old, contracted from the nurse. The history had been given him by Dr. Rowan, of Stouffville.

On September 24th the doctor was called to see a woman aged 22, married, in confinement. Found that she had been delivered of a child twenty-five minutes before ; the placenta was not yet expelled. A neighbor woman had washed and dressed the child. After the third stage was over the uterus contracted well. The neighbor washed the mother's genitals with carbolized water. As he was retiring from the case the neighbor reported that two of her children had sore throats; he was asked to see them. There was a large amount of deposit in their throats. The mother had been washing the children's throats out before attending the confinement, and had not washed her hands after doing so. Eight hours after the delivery the infant's umbilical cord was washed with a solution of boracic acid and dusted with a mixture of iodoform and boracic acid powdered and covered with absorbent cotton. The mother was sponged with a carbolic wash three times a day. On the fourth day there was slight œdema around the umbilicus. The next day this was increased and assumed a coppery red color. The same day the stump separated. On the sixth day the umbilicus was covered with a false membrane. This condition continued until the tenth day, when the child died. On the fifth day the mother's labia appeared œdematous; on the sixth this was increased and the discharge became malodorous. A diphtheritic deposit appeared on the genitals and inner portions of the labia. The breasts ceased to secrete ; the temperature rose, and on the twelfth day vomiting set in. Death ensued. There was a little deposit in the throat. From the ninth day the œdema of the vulva was very great. The labia became tense and crowded together. There was no tenderness over the uterus until the thirteenth day ; on the fourteenth the uterus was tender and enlarged. The treatment consisted in the use of carbolic lotions until the sixth day. When the discharge became foul bichloride and peroxide of hydrogen were used, and a pad saturated with a solution of permanganate of potash placed between the labia. The throat was sprayed with Dobell's solution. The patient was given food and stimulants freely. Nitro-muriatic acid and strychnia were administered.

Suppurative Cholecystitis.—Dr. H. B. Anderson read a paper on Suppurative Cholecystitis with rupture of the gall bladder, complicating

typhoid fever. The patient, J. S., was admitted to the Toronto General Hospital September 16th. He was able to work at his trade in Detroit till July 6th, when he was taken suddenly ill with chills and fever; vomiting and diarrhœa, with acute abdominal pains. Chill occurred daily. He was treated for malaria. He recovered and returned to work again August 1st, still feeling miserable. He was taken worse in a few days. Chills, fever, vomiting, diarrhœa and headache with a good deal of abdominal pain on the right side were the principal symptoms. He was again treated for malaria, taking quinine till cinchonism was produced, with no result. He was examined before the Mississippi Valley Medical Association. Malaria was diagnosed. Of several other men who were working with him and similarly affected, two had died. The patient came to Toronto September 16th. Was placed under the care of Dr. Davison at the hospital. Dr. Davison being absent, the reader had charge of the case. The malarial parasite was first looked for, but none found. This examination was repeated for several days with a negative result. The blood showed six million red cells; hæmoglobin normal; leucocytosis present, there being an increase of the polynuclear leucocytes. Malaria was thus excluded and some acute inflammatory process pointed to. The temperature was ranging from normal to 102. The pulse was soft and of a low tension. The tongue was dry, red and tremulous; lungs and heart normal; mind clear; abdomen on the right side full and prominent and tense; left abdomen soft and lax. Palpation and percussion produced intense pain on the right side all over the region of the liver in front and behind and some distance below. It was difficult to define the area of hepatic dullness on this account. There was no pain or tenderness in the right iliac fossa. There was no enlargement of the spleen and no eruption seen on the body. Urine negative. Erlich's reaction was not tried.

Diagnosis: Probably abscess of the liver. There was no history of gall-stones or jaundice. There was swelling beneath the ribs below the ninth intercostal cartilage. On the fifth day after admission the intense pain and swelling disappeared and the patient felt comparatively better. This was soon followed by general abdominal tenderness. The temperature arose to 103, but fell to normal on the evening of each day. The pulse became rapid and weak. Involuntary evacuations of urine and feces took place. Patient grew unconscious and died on the 26th, eleven days after entering.

Autopsy: General peritonitis, acute, with considerable brownish yellow fluid in the cavity, bile-stained, which contained many polynuclear cells containing yellow pigment. Bacteria in the form of curved rods

and rounded ends present. The small intestines were bound together by recent inflammatory adhesions. The solitary glands were swollen and ulceration present in a few of Peyer's patches. The floors of the ulcers were clean and smooth, and appeared three or four weeks old. The liver weighed four pounds and showed passive congestion. The cystic duct was obstructed by gall-stones. The mucous membrane of the gall bladder showed ulcerated patches. The tissue between the ulcers was reddened and congested. On the right side of the gall bladder, one and one-half inches from the margin of the liver, one ulcer had perforated through into the general peritoneal cavity. Externally there were adhesions to the liver by a fibrinous deposit. The gall bladder was greatly dilated. The spleen weighed six ounces. Cultures from the peritonitic fluid showed a rod bacterium, short, with rounded ends, somewhat constricted in the centre. In places they formed threads. It corresponded to the bacillus typhosus or the bacillis coli communis. An alkaline culture was made ; no ingol was found, which proved it was the bacillus typhosus. The doctor referred to the comparative rarity of this complication ; to the power of the bacillus typhosus to set up inflammation, and the marked leucocytosis, and to the ease with which malaria was excluded by microscopic examination of the blood.

Dr. PETERS asked if the swelling in the neighborhood of the ribs was apparently due to congestion of the liver, or if it was localized to the neighborhood of the gall bladder, and how many days before death it was noticed.

Dr. MCPHEDRAN asked if the attack in July was not due to gall-stone impaction in the cystic duct leading to dilitation of the gall bladder. He could not see how the bacillus would get up the duct. He thought the infection was more probably hæmatogenous. He asked if the spleen was a typhoid one, and if there were any cultures made from it ; if the chills and fever were due to the biliary infection. He was glad attention had been called to the condition of the blood. It was quite remarkable that the red cells and hæmoglobin were normal after so long an illness.

Dr. PETERS said that the question of a possible operation had occurred to him ; would it be possible in such a case to operate on such a gall bladder and drain? Of course, the operation would be a very severe one on a patient in so low a condition. If one could diagnose positively the distended condition of the gall bladder he would probably recommend operation, although there would be great danger attending it. In the case presented there was no mode of escape for the pus from the gall bladder, and any operation would be

incomplete with an attempt to evacuate the duct. He complimented the essayist on the clinical and pathological report of the case.

Dr. OLDRIGHT called attention to the great difficulty of knowing what to do in such cases. This had been his experience.

Dr. H. WALKER thought an exploratory incision could have done no harm, at any rate; it might have led to a successful issue.

Dr. ANDERSON said that when the trouble first appeared there was no localized tumor; but about the fourth day the fullness opposite the ninth intercostal cartilage appeared. The tenderness was all over the liver, it was not localized. The swelling in the neighborhood of the gall bladder was not noticed till later. He thought it was a case for surgical treatment and reported it to the surgical side, but he understood it was considered too late for interference. The spleen was typhoid in character, but no cultures were made from it. There were no marked symptoms of typhoid.

Atropia Poisoning.—Dr. R. J. WILSON read the report of a case of atropia poisoning. Mrs. C——, aged 24. About noon drank a solution of atropia, containing 1½ grains. Reader saw her with Dr. M—— an hour and a half after taking the solution. She had then been vomiting at intervals for a few minutes and was drinking hot water. The pupils were widely dilated, pulse 120, respiration 12. Administered ¾ grain of morphia hypodermically.

2.15 p.m.—Pulse 144, respirations 8, pupils widely dilated, patient delirious. Gave ¾ grain of morphia.

3.00 p.m —Pulse 120, respirations 6. No change in the size of the pupils.

4.30 p.m.—Pulse 104 and weak, respirations 4, ¼ grain of morphia given, and ¼ grain of pilocarpine.

5.30 p.m.—During the last hour employed artificial respiration with no success. The breathing was stertorous, expiration being prolonged, face livid. The pupils showed slight decrease in size, skin cold, temperature in axilla 97.6. Injected 5 drachms of brandy and ¼ grain pilocarpine.

6.30 p m.—Pulse 120, respirations 5, skin warmer. Administered 2 drachms of brandy, also ¼ grain morphia and ⅛ grain pilocarpine.

7.30 p.m.—Pulse 120, stronger, respirations 6, marked decrease in the size of the pupils. Injected 1½ drachms of brandy.

8.00 p m.—Respirations 7, consciousness returned, more color in face.

8.30 p.m.—Respirations 8, recognized faces, but could not see small objects distinctly. Had diplopia. Bathed limbs and chest with hot water, and applied hot water bottles to body.

10.00 p.m.—Respirations 9, slight perspiration on chest.

11.00 p.m.—Pulse 120, respirations 12, perspiring freely. The following day patient could not see to read, but on the second day the vision was quite normal. Recovery was uninterrupted.

Dr. WILSON reported a second case: A little girl, aged 5, had taken a quantity of linimentum belladonna. The child was quite red when he saw it an hour after. The temperature instead of being subnormal was abnormally high, being 108, and after the death of the child it had risen to 110. Another feature was, the child had tetanic spasms coming on about four hours after she had taken the belladonna.

Dr. OLDRIGHT pointed out that the maximum doses in the B. P. were too large. In a prescription he had written he had put down grain 1-25 of atropia. When he visited the patient next day she had an eruption, the face was flushed and the throat was dry. She did not repeat the dose. He found that the druggist had put in 25m. of solution of atropia, making a 2m. dose, a much larger one than had been ordered, being about 1-12 of a grain. The dose in the B. P. was 1 to 4m.

The president stated that he had changed in a prescription containing atropia 1-10th to 1-20th by writing the 2 heavily over the 1 in the denominator; but the druggist had misconstrued it to mean ½. After taking a dose the patient had a very uncomfortable night. He related two other cases where the patients had taken a quantity of belladonna liniment instead of some other medicine meant for internal use, by mistake. But by the use of morphia and the stomach tube recoveries took place in both cases.

Dr. JAMES MCCALLUM related the case of an old man who was undergoing treatment for his eyes, atropia gr. 4 to the ounce being used for eye-drops. He was brought to the hospital in a state of delirium, and it was impossible to tell whether he was suffering from alcoholism, atropine poisoning, or pneumonia. But the following day discovery of the physical sign of pneumonia on one side of the chest revealed what the true condition was.

Dr. WEBSTER reported a case in which an eruption appeared on a young girl who was wearing a belladonna plaster. He had had another case in which ½ grain tablets of belladonna had produced toxic effects. The same dose repeated in pill form had no such effect. He referred to another patient in whom 1-10th of a minim fld. ext. produced a very severe headache and marked dryness of the throat.

The society then adjourned.

Editorials.

Graveyard Insurance.

Many attempts have been made, in every country where life insurance offices are to be found, to obtain money fraudulently by securing policies upon persons who were known to be diseased. These attempts have, no doubt, succeeded on many occasions, but the prospects for schemes proving successful in the future are rapidly growing less.

In order to work such infamous plans of fraud several parties must be in each other's confidence. The risk must come through some agent of the company; the insured, or the person who is to be made beneficiary under the policy, must be in the plot; and the doctor, who is to pass upon the risk, has his share in the transaction.

Now, it is well to remember that the companies have several means of obtaining information regarding risks, which those who have evil intentions should bear in mind. Among the companies there is an exchange of information as to risks that have been rejected, and of medical men who are not deserving of trust either because of carelessness or dishonesty. There are also private bureaus, which make it their business to find out, by careful enquiry, information about agents, doctors or applicants.

Another thing that should be borne in mind is that persons of bad health are almost invariably known to a certain number of people as not fit subjects for life insurance. When a policy is sought, and obtained, upon such persons, it soon becomes noised abroad; and the agents of rival companies and the bureaus of information learn the main facts. In this way it soon reaches the head office of the company upon which the wrong has been practised. Immediate steps are then taken to ascertain the true condition of affairs.

Still further, it must be borne in mind that the country is full of those who carry policies in the several companies and societies. If any one of these policyholders comes to hear of the fact that the company he is interested in is being victimized, he is very likely to give away his information, and in this way defeat the attempted fraud.

It must be said for the medical profession that very few indeed of its members would be party to any attempt at fraud in this way. But even to these very few scoundrels we would utter a word of warning. The fraud is almost sure to be found out, and may lead to very grave results. Even if it be not definitely discovered, it is likely to be strongly suspected, and the doctor may thus lose a valuable connection, and the patronage of the numerous companies.

Vaccination Against Diphtheria.

At the opening meeting of the German Medical Congress at Lubeck, Dr. Behring read a paper on the antitoxine treatment of diphtheria, which is worthy of note. He stated that the mortality from diphtheria had considerably decreased in all hospitals in which it had been introduced. He denied that this was due, as was asserted, to the mild character of the cases. He estimated that in the last twelve months in Germany alone at least 1,000 had been saved from certain death by the serum. Dr. Behring repeated the statement made by him in Vienna that it would be possible by the aid of the serum to reduce the mortality to 5 per cent. Further, he declared without hesitation that the 400,000 doses prepared by the institution under the supervision of himself and of Dr. Erlich had not contained any injurious matter. He thought it was time to begin general vaccination of children with the serum as a preventive of diphtheria. It had been found possible to manufacture serum of such strength that the injection of only half a cubic centimetre ought to suffice to give complete immunity to children who are not already attacked.

The Doctorate and the Military Law.—Dr. Sprague, of Stirling, has kindly furnished us with a translation from a French journal, which appears on another page. This is most interesting in view of the agitation which now exists in Ontario to raise the standard of medical education and prolong the course of study.

To get the feeling of the medical men on lodge and contract practice in Toronto, the Western Territorial Division of the city are circulating the following: I the undersigned medical practitioner agree not to do any lodge or contract practice as soon as ninety-five per cent. of the medical men of the city sign this agreement, and when present contract expires.

Death of Mathieson, "The Eye Doctor."—On the 17th ult., there died in this city a somewhat remarkable character, who, for many years, and in spite of frequent convictions of violation of the Medical Act, carried on a business as an "eye doctor." His method was to charge so much a week for medicines. He had a considerable hold on the imaginations of the country people, who frequently came great distances to be "doctored" by him. He had formerly been a private soldier in a Highland regiment.

Retiring Allowances to Drs. J. Ferguson, W. W. Ogden and M. H. Aikins.—After long delay and much discussion the Senate of the University of Toronto passed a statute through all its stages placing these gentlemen in the same position as though they had resigned. The medical faculty, though by no means unanimously, decided to send a committee to wait upon the Government to oppose the confirmation of the state. Drs. I. H. Cameron, A. McPhedran, and Prof. Pike composed the deputation from the faculty. At a later date Drs. W. W. Ogden and J. Ferguson were heard in behalf of their contentions that the statute should be confirmed and the payments made. The statute was confirmed by the Government, November 5th.

Ontario Medical Library Association.—A meeting of the Board of the Ontario Medical Library Association was held on Friday evening. The following officers were elected: Dr. J. E. Graham, president; Dr. L. McFarlane, 1st vice-president; Dr. L. L. Palmer, 2nd vice-president; Dr. W. J. Greig, treasurer; Dr. N. A. Powell, curator; Dr. J. H. Hamilton, secretary. The report of the Treasurer was the most favorable one we have had for years. It showed that the receipts had been able to keep pace with the expenditures. This is due to the fact that a donation from the Ontario Medical Association had been received, and that by-law xxxii., providing for the collection of the annual fee of $2 from each member, has been put into operation for the first time. The hope was expressed that members would respond promptly and by so doing help the Board to make the library still more useful to its members. The report of the Curator showed a substantial increase in the number of valuable books, journals, etc., and many promises of donations were mentioned. The Curator also reported that arrangements had been completed so that members of the Ontario Medical Association could procure the loan of books from the Surgeon-General's Library in Washington at cost of express. This is a very valuable privilege for those engaged in research.

Western Territorial Division Association of Toronto.—A meeting of this Association was held at 4 p.m. on Thursday, October 10th, 1895, at Broadway Hall. In the absence of the President Dr. Albert A. Macdonald, the Vice-President, was called to the chair. After the reading and confirming of the minutes of the previous meeting, business arising out of the minutes was taken up. Prescribing by druggists, repeating prescriptions, etc., was now discussed at length. The

opinion was expressed that the work already done, and the meeting of representatives of the Druggists' Association and members of this Association has been productive of some good and a better feeling and understanding, the druggists seeming willing to conform to our views and to meet our requirements. The discussion of "club practice" came in for a large share of attention. It was admitted by almost all of the members present that it was an evil which should be got rid of, and at the same rime harsh measures were not urged. One of the members held an opposite view; he said that the members of his clubs were most considerate and that he had received from one of his clubs as much as $3.00 a visit. It was resolved that the members of last year's committee, Dr. Spence, chairman, should be continued and that they should find out the feeling of the medical men of Toronto on the question of "club practice" by sending out circulars, etc., and that the committee should report at the next meeting. The question of "bad pay patients" was discussed, and it was agreed to accept Dr. Mennie's offer to undertake the management of a "black list," and to give him all possible support. The meeting was then declared adjourned.

Why They See Snakes.—Dr. A. E. Davis, in the *Post Graduate* for October, reports the results of a large number of examinations of fundi oculi in patients suffering from delirium tremens. In all the blood vessels were dilated and tortuous. He points out that the hallucinations in ninety-five per cent. of these cases are those of sight, and he believes that the "snakes" seen are most likely these vessels, which lie in the anterior layers of the retina, being perceived by the rods and cones which lie in the posterior layer.

Dr. Gowers' Address to Medical Phonographers.—The *British Medical Journal* for October 5th contains the inaugural address delivered by Dr. W. Gowers before the Society of Medical Phonographers on "The art of writing in relation to medical and scientific work." Dr. Gowers characterizes the present mode of longhand as littte less clumsy than when the Phœnecians and Egyptians first gave alphabetical writing to mankind. He sets forth the unmixed advantages of shorthand in the recording of clinical and other scientific data. It enables the student to make a perfect epitome of his lectures, more useful than any text-book, and yet give more attention to the subject than if he took no notes. Experiment shows that two hours a day with a lesson each day, in a fortnight a person can write at the same speed as longhand and at the end of a month secure its practical use.

New Treatment for Severe Vomiting.—Dr. C. L. Greene, of St. Paul, in *Northwestern Lancet* for October, claims that he has obtained good results in uncontrollable vomiting by intubation of the larynx. His theory is that unless the glottis is closed so as to fix the diaphragm vomiting is not possible in the adult. To prevent the necessary fixation of the diaphragm, a tube is placed in the larynx. This permits the free ingress and egress of air, and obviates the spasmodic closure of the glottis. When abdominal muscles contract the stomach is pressed against the diaphragm. This yields, and the contents of the stomach are not ejected.

Puerperal Convulsions.—Dr. Thad. A. Reamy, in *Cin. Lancet Clinic*, 12th October, highly recommends the use of Norwood's tincture of veratrum viride in this disease. He gives twenty or twenty-five minims hypodermically. In the course of an hour it may be repeated if necessary. Soon after the depression the pulse falls in pregnancy and becomes soft, and profuse perspiration sets in. If the pulse again becomes frequent and hard the veratrum should be again given. If the drug is followed by symptoms of dangerous depression, these are speedily removed by the hypodermic injection of morphia. It is noteworthy that this drug counteracts the depression of veratrum and at the same time is valuable in the treatment of the convulsions. It is in this way that the mixed treatment by veratrum and morphia is so valuable in many severe cases of puerperal convulsions.

Address on Medical Education.—Professor Roswell Prark, in his address on medical education at the fifth annual meeting of the Harvard Medical Alumni Association, said, from a retrospective view, what had hindered the progress of medical education in time past, and that which being removed had permitted the rapid strides of the last few decades, was the malign influence of the Church. The Church and its authority had been the greatest enemy of medical progress in all past time. The subjects against which its authority had been most obstinately wielded were those of anatomy and surgery. Learning in the Middle Ages was confined to the monasteries, and the monks were taught that to shed blood was without their pale, and it was considered impious to mutilate a form which was made in the divine image. During the fifteenth and sixteenth centuries, although public lectures on anatomy were held, the professor did not do the dissecting; he hired some barber to do it, and himself simply expounded what the barber exposed. A recent step in the way of a medical

extension course they were adopting in Buffalo was the application of the Chautauqua idea. A series of studies for three years was to be laid down and a certificate would be granted on passing an examination on the work. This was simply an incentive to home study.

Medical Education.—Dr. Jonathan Hutchinson, in delivering the opening address at University College, Liverpool (*British Medical Journal*), speaking on the subject of medical education and referring to specialism, says he considers it far better to have a general acquaintance with all that is around us, though it be not very deep, than slices of profound knowledge, placed sandwich-ways between layers of utter ignorance. His opinion on the examination evil is that the student should be brought to feel that his examinations so far from being a source of harass and worry, are really his best friends, guiding his work and at the same time guaging his attainments. He recommends that a carefully prepared list of suitable questions be accessible to the candidates. He advises against *viva voce* examinations. To check incompetent and idle men from entering the profession, the key is in the hands of the examiner.

Military Medical Notes.

The French medical officers can hardly complain of want of official recognition. In the last *Gazette* no less than thirty-four were created as commanders, officers or chevaliers of the Legion of Honor.

A correspondent of the *Army and Navy Gazette* (London) complains that medical officers whose names are put up for ballot at the service clubs are almost invariably blackballed. The editor questions the statement.

Surgeon-General Sir Thomas Longmore, C.B., of Southampton, died suddenly at Swanga last month. He was born in 1816, and was the son of a surgeon in the Navy. He was educated at Merchant Taylor's School and at Guy's Hospital, and entered the Medical Department of the Army in 1843. He served throughout the Crimea campaign and in Bengal during the Mutiny. He was professor of military surgery at Netley from 1860 to 1891, and he had been honorary surgeon to the Queen since 1868. He was the author of a number of works, among them being "A Treatise on the Transport of

Sick and Wounded Troops," "Gunshot Injuries: their History, Features, and Treatment," "Sanitary Contrasts of the Crimean War," and a "Life of R. Wiseman, Surgeon to Charles II." His "Optical Manual" is the standard work in connection with the eyesight of soldiers.

THE death of Baron Larrey, third Napoleon's surgeon, recalls an adventure of his father, the first Napoleon's medical adviser at Waterloo. , The elder Larrey bore so striking a resemblance both in physique and in dress to the Little Corporal that when he was taken prisoner by the Prussians they thought they had captured the Emperor, and ordered him to be shot. But the doctor who was ordered to bandage his eyes recognized him as his old instructor in medicine, and at his request Larrey was sent to Blucher, who gave him some money and dismissed him.

Book Notices.

An Illustrated Monograph on Oxyhæmoglobin and Allied Products. Published under the direction of F. E. STEWART, M.D., PH.G., Director of Scientific Department, F. Stearns & Co., formerly Demonstrator and Lecturer on Materia Medica and Pharmacy, Jefferson Medical College, etc. Detroit: F. Stearns & Co. 1895.

This illustrated monograph of 56 pages emanates from the scientific department of F. Stearns & Co. of Detroit, and is divided into three parts. Part I., by Dr. Stewart, deals with Oxyhæmoglobin, albuminate of iron, and peptonate of iron. Part II., written by Dr. A. B. Macallum, Associate Professor of Physiology, University of Toronto, on the absorption of iron in the animal body, contains an account of his investigations as to the absorption of both organic and inorganic iron compounds; and Part III., by Charles H. Williams, Ph.B., Ph.C., of the School of Pharmacy, University of Michigan, is on the Hæmoglobins and related products of the market. The publishers are to be congratulated on issuing a work like this from their scientific department—a departure in the right direction. They maintain that the manufacturing pharmacist is comparatively little to blame for the present situation in regard to proprietary medicines, in that he has simply supplied what is called for, leaving it to the profession to create a demand for something better. This the latter can now do by co-operating in the work of their scientific department, and as an evidence of liberal spirit they offer remuneration for such work as may be done under their control or in the laboratories of the universities. This brochure is entitled to a careful reading.

Green's Pathology and Morbid Anatomy. Pathology and Morbid Anatomy. By T. Henry Green, M.D., Lecturer on Pathology and Morbid Anatomy at Charing-Cross Hospital Medical School, London. Seventh American from the eighth and revised English edition. Octavo volume of 595 pp., with 224 engravings, and a colored plate. Cloth, $2.75. Philadelphia: Lea Brothers & Co., publishers. 1895.

Green's Pathology and Morbid Anatomy has long been the leading text and reference book in all English-speaking countries, a fact indicated by the number of editions demanded. A knowledge of the subjects covered by its title is essential to graduation and not less so to the practitioner, who must understand the nature of a disease as a prerequisite to rational curative measures. Thanks to the tireless industry of laboratory workers and clinicians these sciences are in a state of constant development, and in order to represent their existing position, this volume has been thoroughly revised and new chapters have been added. The previously rich series of illustrations has been increased with sixty new engravings and a colored plate.

The general character of the work is maintained throughout notwithstanding the numerous additions by various collaborators, as all have imitated the desirable conciseness and lucidity of the author. The first chapter deals with arrested nutrition, after which eight chapters are devoted to impaired and increased nutrition. Six chapters are given up to tumors. Then diseases of the blood and circulation are considered, then fever, inflammation, the vegetable parasites, the infective granulomata, septicæmia and pyæmia, malaria, and diseases of the special tissues and organs, and the last chapter, on the pathology of the central nervous system by Dr. Mott, is a notable addition admirably illustrated.

Saunders' American Year-Book of Medicine and Surgery. Edited by George M. Gould, A.M., M.D.; assisted by eminent American physicians and teachers. To be published by W. B. Saunders, 925 Walnut Street, Philadelphia.

Notwithstanding the rapid multiplication of medical and surgical works, still these publications fail to meet fully the requirements of the general physician, inasmuch as he feels the need of something more than mere text-books of well-known principles of medical science.

This deficiency would best be met by current journalistic literature, but most practitioners have scant access to this almost unlimited source of information, and the busy practiser has but little time to search out in periodicals the many interesting cases, whose study

would doubtless be of inestimable value in his practice. Therefore, a work which places before the physician in convenient form an epitomization of this literature by persons competent to pronounce upon the value of a discovery or of a method of treatment cannot but command his highest appreciation.

It is the special purpose of the editor, whose experience peculiarly qualifies him for the preparation of this work, not only to review the contributions to American journals, but also the methods and discoveries reported in the leading medical journals of Europe, thus enlarging the survey and making the work characteristically international.

This work will be replete with original and selected illustrations, affording efficient aids to a right comprehension of the text, and adding to the attractiveness of the volume. This work will be ready for delivery January 1st.

A Treatise on the Nervous Diseases of Children for Physicians and Students. By B. SACHS, M.D., Prof. of Mental Diseases in the New York Polyclinic, Consulting Neurologist to the Mt. Sinai Hospital, etc. New York: Wm. Wood & Co. 1895.

Clinical Lectures on Diseases of the Nervous System. Delivered at the National Hospital for the Paralyzed and Epileptic, London. By W. R. GOWERS, M.D., F.R.S., Physician to the Hospital, Consulting Physician to University College Hospital, formerly Professor of Clinical Medicine in University College. Price, $2.00. Philadelphia: P. Blakiston, Son & Co., 1012 Walnut Street. 1895.

The author delivered these lectures at the National Hospital for the Paralyzed and Epileptic. They were reprinted from various English medical journals, with the exception of two lectures, which are reproduced by permission of the J. B. Lippincott Co.

This book is handy in size, and excellent in print. The well-known name of the author is a sufficient guarantee that the purchaser will receive more than his money's worth.

The table of contents shows how the writer has dealt with subjects attractive to the practitioner. Among the subjects lectured upon we notice a chapter on "Mistaken Diagnosis," one on "The Foot Clonus and its Meaning," two upon "The Infantile Causes of Epilepsy," two upon "Locomotor Ataxy," one upon "Syringo-Myelia," and two upon "Optic Neuritis."

There are other chapters covering rare forms of nervous disease. Chapters 3 and 4 deal with argyria and syphilitic hemiplegia.

One feature of this work is that a chapter is complete in itself, and so comprehensive that a busy practitioner can take up the work and quickly come at just what he is looking for. We confidently recommend this book to our readers, and believe that it will be a help of great value to the student and practitioner.

Personals.

Dr. J. W. Early has removed to Owen Sound.

Dr. Hotson, of Innerkip, has removed to St. Mary's.

Dr. C. Shuttleworth, late of the General Hospital, has commenced practice on Broadview Avenue.

Dr. W. T. Wilson, of Dundas, has received an appointment as assistant at the Insane Asylum at Brockville.

Dr. W. T. Aikins has been appointed to the Senate of Toronto University as representative of Toronto School of Medicine, Dr. J. H. Richardson will also be a member of that body as the representative of University College Council.

Quick Passage of a Murphy Button.—In the *New Albany Medical Herald*, Dr. John M. Foster, of Richmond, Ky., reports the passage of a "Murphy button" in less than three days after a resection of the bowel, with recovery. It came away with the first movement of the bowels—sixty-eight hours after the operation. This is by far the most rapid union of intestine yet reported, and it is in strange contrast to the Nashville (Tenn.) man who was operated upon by Dr. Cordier and myself; this patient retained his button until the 15th day, but recovery was perfect.

The Archives of Pediatrics will commence its 13th year with the January number, under the business management of E. B. Treat, publisher, of New York, long identified with medical publishing interests. The *Archives* has been for twelve years the only journal in the English language devoted exclusively to "Diseases of Children," and has always maintained a high standard of excellence. The new management propose several important changes in its make-up, increasing the text fifteen per cent. and enlarging its scope in every way. The editorial management will be in the hands of Floyd M. Crandall, M.D., Adjunct Professor of Pediatrics, New York Polyclinic, and Chairman of Section on Pediatrics, New York Academy of Medicine.

Miscellaneous.

A DEPOT for the sale of Dr. Jaeger's sanitary woollen underwear and dress material has been opened in this city. These goods are well known to the medical profession in Great Britain, on the continent and in the United States, and have been most highly recommended for their purity and essential goodness. A price list and full particulars will be mailed to any member of the profession on application to Wreyford & Co., 63 King Street west.

WE would call the attention of the profession to a paper (published in another column) by Dr. Thos. O. Summers, entitled "Protonuclein: Leucocytes and Nuclein." This paper was read before the Section on Practice at the meeting of the American Medical Association recently held at Baltimore. The paper was illustrated upon a screen, showing microphotographs of protonuclein and its action upon the leucocytes of the blood. It is claimed that the introduction of this agent will mark an era in therapeutics, and it is sufficiently endorsed to warrant a fair trial.

THE MORALS OF A SURGEON.—What a man does is the proof to the world of what a man is. Many good people fear that the advance of science will bring about the retrogression of morals and religion. We do not agree with them. But if they cannot accept our judgment, let them weigh well a fact like this: Mr. Jonathan Hutchinson, F.R.S., and ex-president of the Royal College of Surgeons, addressed his professional brethren assembled in annual congress the other day, and he thus spoke: "I bore with such equanimity as I could the discovery that I could not compete with my friend in the ratio of successes obtained" (in operations for ovariotomy), "and, acting on the rule of conduct that I would never keep a patient in my own hands if I believed that someone else could do what was needed with greater prospect of success, I gave up doing ovariotomies, both in public and private, and used to transfer my patients from the London to the Samaritan Hospital." Here is a rule of conduct which has never been excelled in moral worth in any department of professional life or private behavior. A most far-reaching and truly noble rule is this of Mr. Jonathan Hutchinson's; and the fact that he announced it toward the close of his career in the hearing of hundreds of his professional brethren, who are almost as familiar as he is himself with the conduct of his professional life, is proof that he spoke mere truth. If these are the morals of men of science, may we not say of men of all professions and callings, *O si sic omnes!*—*The Hospital.*

Illegal Practitioners.

THOMAS WASSON'S REPORT.

List of persons prosecuted and cases investigated by Detective Wasson and his assistants, Constables Brown, Briggs, McRener and Boyd for violation of the Ontario Medical Act in the various parts of the Province since 1st of January, with results: R. S. Gilmore, Wiarton, fined $25; James Beaton, Kincardine, fined $25; Dr. G. J. Fell, Ridgeway, fined $35; Kickapoo Indians, Stevensville, dismissed; J. McKelvey, St. Catharines, no case; Henry Musson, Allenburgh, no case; J. S. Powly, Toronto, fined $30; Mrs. Gilbert, Huntsville, fined $27; J. W. Black, Toronto, fined $25; M. A. Graham, Toronto, fined $25, skipped out; A. McLeod, Owen Sound, no case; A. P. Stirritt, Toronto, fined $35; Ruth Beasley, Toronto, fined $25; Dr. Washington, Crysler, fined $50, has appealed; F. N. Cadeaux, Toronto, dismissed; W. D. McNabb, Tara, fined $25; Mrs. Bauvine, Berwick, no case; Mary A. Labrick, Toronto, left town: T. A. Pine, Northbrook, fined $25; F. H. McCarthy, Ottawa, fined $40; Dr. A. Oumet, Ottawa, fined $25; Mrs. R. Thompson, Ottawa, fined $25; Mrs. A. McKelvie, Ottawa, fined $25; Mrs. R. Lange, Ottawa, fined $25; S. Townsend, Ottawa, withdrawn; Professor Gustin, Orangeville, skipped the town, warrant issued for his arrest; J. W. Wesley, Petrolia, committed to jail; J. McCarthy, Paris, committed to jail, subsequently he paid his fine and was released; laid another charge against Dr. N. Washington, to appear at Chesterville on the 22nd inst.; J. Bealing, North Bend, withdrawn; T. A. Pine, Flinton, fined $25; Andrew Robinson, Maberly, fined $25; A. Finlay, Mountain Grove, fined $25; Mrs. John Kane, Ottawa, no case; Mrs. Enoch Thompson, Ottawa, no case; Mrs. Ann Kelly, Ottawa, no case; Mrs. M. Ackland, Ottawa, no case; Mrs. Sherron, Clarkstown, no case; Mrs. Burton, Bytown, no case; Professor Glen, Wasego, fined $25; Dr. Jebb (oculist), Orangeville, was billed for four days, stayed only one day and left as I arrived there; laid an information in Orangeville against J. W. Black, of Toronto, case to come up on the 16th.

I have arranged with J. Hughes, High Constable of Dufferin County, to assist me in that district. I am getting up evidence in two cases against qualified practitioners, one east and another north, for investigation by the Discipline Committee.

I have sent Brown to Palmerston and all through places in that section where I hope to be successful. Next month I intend to go to Muskoka and Algoma districts prosecuting.

THOMAS WASSON,
Detective, C. P. and S. O.

Protonuclein: Leucocytes and Nuclein.*

BY THOS. O. SUMMERS, M.A., M.D., F.R.S.C., LONDON, ETC.

I BELIEVE that St. Luke was the only physician upon the Apostolic Board, and that he is the generally accredited author of "The Acts of the Apostles," in which, describing the visit of St. Paul to Athens, he declares parenthetically this very remarkable historic note:

"For all the Athenians and the strangers that were there, spend their time in nothing else but either to tell or to hear some new thing."

And this *neophilism* which the great Apostle of the Gentiles has given as an historic character to the "City of the Voilet Crown," has descended unto us of later days, and it may be said with truth, that among all the workers in the great field of science, medical men are most eager for discovery and most earnest in the search for the ever unfolding mysteries of truth. And notwithstanding the fact that this spirit of investigation has often been held up to us by those who profit by our labors, and yet are ever ready to sneer at our methods, as the "opprobrium medicorum," it will be a sad day in the history of medicine when we care not to "hear or to tell some new thing."

It is to a new departure in therapy, developed by recent investigation, that I direct your attention in this paper. There is nothing which has so distinctly characterized the trend of modern therapeutics, and separated it from the empirical methods of the past—which have crowned our materia medica with vast masses of useless rubbish, as the contribution of physiological products to the control of disease. It is strange that we have moved so long in the light of physiological discovery thrown upon us by the microscope, the spectroscope, and the ingenious apparatus which makes our laboratories more wonderful to the untutored mind than were ever the alembics of alchemy to any age of romance and superstition—it is passing strange, I say, that we have so long overlooked the very principles upon which alone a scientific system of therapeutics could ever be established—the functional relations of the cellular elements of the organism. As long ago as that stormy time in the history of the British Association, when the Thompson-Tyndall prayer-test was convulsing the religious and scientific world, a no less interesting discussion grew of that contest upon the subject of spontaneous generation. So strong was the antagonism developed that it affected even the terminology of physiology, Dr. Lionel S. Beale, the recognized champion of the "orthodox"

*A paper read before the Section on Practice at the Forty-sixth Annual Meeting of the American Medical Association, held at Baltimore, May 7th to 10th, illustrated upon the screen, showing microphotograhs of protonuclein and its action upon the leucocytes of the blood.

party, clinging to the principle of "vital force" and giving to the blastema of the ultimate physiological unit of the organism the name of bioplasm, while Professor Huxley gave the name of protoplasm to that which he and all of his school recognized as the "Physical Basis of Life." Nothing then was known of the exact structural and functional character and relations of this peculiar cell substance, which appeared to act so differently under conditions apparently the same. It remained for later physiologists to show just what part this ultimate vitalized material played in the great drama of physiology. It was found that both these great scientists were correct, but viewing this cell-blastema under different conditions their definitions differed accordingly, yet led up to the same result, as in the case of Copernicus and Ptolemy, or to speak poetically:

> "Like that target discussed by the travellers of old,
> Which to one appeared argent, to one appeared gold;
> To him ever lingering on doubt's dizzy margent,
> Appeared in one moment both golden and argent."

The first step in what may be called the new physiological system was taken when with the improved mechanism of the microscope it was demonstrated that of the two kinds of corpuscles that float in the plasma of the blood, the larger and white corpuscle, the leucocyte, was in every respect a perfect cell, possessed of a cell wall, which Dr. Beale distinguished as "formed material," a blastema or plasmic granular substance, in which floats a body called the nucleus, and within that the nucleolus. How many of these may be thus involuted, can no more be estimated than can the problem of time and space be solved by the finite mind.

The next step towards establishing our new physiological system was taken when the leucocyte was found to be the real unit of the organism, the agent through which all nutrition is accomplished. Up to a very recent date it was believed that all nutritious material which had been operated upon by the digestive agents passed directly into the general current of the circulation, floating freely in the plasma of the blood till it reached the capillaries, and then by a reversed osmotic process was taken up by the individual tissue cells, only that part being taken up by them which was necessary to the support of that structure represented by the cell—the rest passing on in a like manner to the other structures, until all the parts of the organism were nourished.

The red corpuscle was organized as the oxygen-carrier of the system, and the eliminator of carbonic acid, but neither the origin nor the

function of the white corpuscle was in the least understood by even the most skilful observers. Later investigations, however, proved the identity of the leucocyte with the lymph corpuscle, which was itself supposed to possess as the simplest original cell, metabolic or tissue-forming functions. This gave a new importance to the leucocyte and when to this was added the recognition of the pus corpuscle in retrograde metamorphosis as nothing more or less than a leucocyte under altered conditions, it was not long before its true significance as the real tissue-builder of the organism was fully established. A peculiar movement of the leucocyte as it goes along through the current of the blood had long been noticed, on account of its resemblance to that of the amœboid movement, by which it changed its form apparently at will, becoming often so elongated and slender that it slipped through the walls of the blood-vessels and held high carnival in the surrounding tissues. All this pointed to some mysterious power or function, as yet unrevealed to the eye of the physiologist. A closer study of its morphological characteristics proved that there were several forms of leucocytes, differing in the number of nuclei which they possessed. The simplest, those having but one nucleus, were called mononuclear, those possessing two or more nuclei were called multi, or polynuclear leucocytes. In these it was seen that the amœboid movement was most active. Vierordt, who has made the most accurate observations upon the blood of any other physiologist perhaps, found the numerical relation of the leucocytes to the red corpuscles to be in health in the ratio of 1 to 671.

Now, we are prepared to understand the next step in the functional history of the leucocyte. These bodies, differing in size, shape, and number of nuclei, were observed to swell up and burst, pouring out a plasmic, granular mass, which appeared to be in a state of active molecular vibration. The nuclei came forth from the breach in the cell wall with some of this blastema hanging closely around it, while the rest of the blastema with the ruptured cell wall floated off in the blood current. Where there were two or more nuclei, each one became rapidly a perfect cell with its nucleus and nucleolus, and in this way was established a great increase in the number of leucocytes. This process of cell proliferation, it will be seen, lies at the foundation of all nutrition.

The next phenomenon observed was what might rationally have been expected to be established—the taking up by the leucocytes of the proteids which are delivered to the blood by the absorbents after digestion is complete.

As soon as these proteids get within the walls of the blood-vessels,

they are immediately attacked by the leucocytes and taken into their cell walls by that osmotic process, which is the basis of all physical action in the organism. Mingling with the blastema of the leucocyte, these proteids become suffused, as it were, with a certain molecular activity imparted to them through the influence of the nucleus, something like that observed when an electric current renders nascent certain chemical agents that without it are negative or inactive. It is this vitalized pabulum to which physiologists have given the name of nuclein.

The next step in physiological evolution is the appropriation of this pabulum by the individual tissue-cells of the body as it passes through the capillaries. And here it must be noted that no assimilation of any nutritive substance (except of inorganic origin, as water, etc.) can take place through any medium but that of nuclein, and it is in the multinuclear form of leucocytes that we find it developed. It has long been known to physiologists, but its wonderful place in the economy of the organism was never known until the close study of the leucocyte developed its origin and function, and in this way cleared up some of the most hidden mysteries of the organism, and placed in the hands of the therapist the most wonderful agent of therapeutic power yet known to scientific medicine.

To return to our panorama of nutrition, seeing that the proteids must all report to the leucocyte and be stamped with their nuclear influence before delivery to the several tissues, the bursting of the leucocyte is readily understood, for by this means the nuclei are set free to become new cells, and a great quantity of this cellulized tissue-pabulum is poured out into the circulation, bathing with food every hungry cell of the several tissues through which it floats, each cell taking up that which is necessary to its molecular activity and returning to the current that which belongs to other and remote tissues of the organism. This conversion into tissue through the circulatory system, of material, lifeless in itself, is the most wonderful phenomenon presented to the human mind. We can not, of course, explain the affinities by which certain kinds of pabulum are accepted and others rejected by the several tissue-cells of the body any more than we can explain the affinities between the sexes, often so seemingly astounding. We know this, however, that the change which goes on is the elaboration of a vitalized or cellulized substance which is capable of entering at once into tissues as soon as it meets the various cells possessing this power of elective assimilation. This primal cellulized pabulum has therefore been appropriately called nuclein from the mode of its generation, and when operated upon by the individual tissue-cell it

becomes protonuclein, after the analogy of Prof. Huxley's nomenclature, which represented its real origin. This substance is rich in phosphorus, and has been separated in active form from the lymphoid structure of the body, as we shall see later.

We are brought now face to face with one of the most formidable problems of physiology, the solution of which will destroy many of our old pathological ideas, upon which so many therapeutic systems have been wrecked. Up to a very recent date in the history of pathology leucocythemia was considered a specific disease. Upon the *post hoc, propter hoc* principle of medical philosophy, the rush of leucocytes to any point of irritation was regarded as a feature, or even as a distinct stage of the disease. How vividly can the memory of some of you recall the old professional saws, as they were called by those of us who sat at the feet of the Gamaliels of those days, among which there was none more familiar than the *Ubi irritatio ibi fluxus!* We answered almost all questions upon inflammation with this single axiom, as we believed it. Often have I heard the venerable Gross straighten his lofty form and declare in stentorian voice that inflammation consisted pathologically of the rapid afflux of leucocytes! How startled would he be to learn that modern physiology has demonstrated that rapid afflux to be nature's reinforcing battalions! Every white blood corpuscle which gathered about that point of irritation bore with it the materials of repair, and as still later investigation has proved, also the power of overwhelming toxic germs, themselves in their incipiency, and protecting the organism against their poisonous and deadly exudations.

As to the phagocytic action or cell-eating power of the leucocytes, which has been strongly claimed by some observers and as strenuously denied by others, it is after all a mere question of difference in the manner of destroying toxic germs which has developed antagonism among physiological observers. It is, as I have upon a previous occasion already remarked, not at all necessary that because the physiological or pathological function of one cell is lost in that of another, we should in speaking of such action as a phagocytic or cell-eating process, imagine a mouth and teeth and all the paraphernalia of mastication, deglutition, etc. The result is the same, whether the pathological germ is swallowed, destroyed, or neutralized; so long as the cellular influence of the leucocyte is the agent which accomplishes this, it is immaterial whether we use the term "phagocytic" literally or metaphorically, but notwithstanding all the adverse criticisms of the word as used in this connection, there is none given us which more emphatically expresses the idea we wish to convey, and

the difficulty of nomenclature is anyhow too great to lightly reject so expressive a word, which, as bacteriologists and morphologists all admit, does certainly most vividly express the primordial condition of which this is the physiological analogue. In its last analysis, after all, it is the molecular disturbance or change produced in the germ that deprives it of its toxic power. This we know will effect even chemical action. Upon this fermentative processes depend. Isomerism is another example of the effect of molecular arrangement or disarrangement. Where can you find two substances more distinctly different than sugar and gum arabic? And yet they are exactly the same in composition and in the proportion of elementary combination, the difference in arrangement of the molecules being sufficient to account for the difference in chemical and physical properties. With these examples before us—and I could, if time permitted, bring out many others equally as striking—it is very easy to see how the slightest disturbance of molecular arrangement in any germ will deprive it of its specific character, and by investing it with certain cellular elements, emasculate the most deadly of toxic bacilli and send them harmless through the blood currents of the organism. Having, therefore, found that it is within the leucocyte that all protozoic material is developed, that upon the proliferation of the leucocyte all assimilation depends, it is but a step further to establish the action of the leucocyte in resisting the effect of toxic germs, as well as divesting them directly of toxic power. It would perhaps be more accurate to define this action by the statement that they are capable in themselves of overcoming the pathological influences which are being continually introduced into that organism. To those whose daily experience brings them face to face with the awful side of human life, I think I can appeal with emphasis, when I state that there is scarcely a breath we breathe, or a drop we drink, or a morsel we eat, that is not charged with the germs of deadly disease, and if there were not in our organism a distinct provision made for the resistance of such germs, to use a Pauline expression, we should "die daily." When the tocsin of disease is sounded through the organism, it is the rushing of the leucocytes that constitutes the first physiological response—to directly resist a toxic agent, or supply the structure attacked with material for nutrition or repair in case of lesion. And yet there are still those among the ranks of intelligent practitioners who consider the increase of leucocytes as an element or phase of disease itself, instead of nature's effort to support her crumbling battlements. At this stage of my argument, I shall, upon the strength of what may be microscopically demonstrated to be the function of the nuclein-charged leucocyte,

make an assertion which I have no doubt will be considered somewhat arbitrary. It is, that whatever of so-called specific effect lies in the antitoxine obtained from the immunized animal, as opposed to the bacillus and the toxine of diphtheria, is accomplished by the excitement of leucocytosis, and after all the end is reached by the same physiological process.

The ultimate aim of all antitoxic agents must be the overwhelming of the toxic element of the germ, and this can only be accomplished by a great excess of physiological tissue-building material. Let us observe the process by which this antitoxic effect is brought about. In the first place, the physiological relation of protonuclein would of course preclude the idea of its action as a direct specific antidote to a specific poison, such as that observed between chemical agents, or even physiological antagonists, as for instance the hydrated sesquioxide of iron against arsenic, or atropia against morphia, or chloroform against strychnia. Were this the principle of the functional activity of protonuclein, its therapeutic range would be limited to such an antagonism, but, as I am prepared to show, by careful experimental records, its effect is first observed when the system has been thoroughly charged with it, thus preventing the expression of the toxic agent by a preoccupation of the nutritive field, and an investment of the attacking germ. I have often noticed a leucocyte, thoroughly charged with original nuclein, adhere to the cell of a sarcoma, and after bursting itself, send the round cell floating away in the field crenated and almost emptied of its contents. Such effects have been observed also upon the blood after days of treatment with protonuclein. This appears to me to be the very *ultima thule* of therapy; and the question will be—has been, very naturally asked after such developments: "If such be the power of a substance capable of investing, controlling, and overwhelming toxic agents, where is the limit of its action?" If I spoke the truth boldly, as it should be spoken, I should answer that, properly applied, I can see no limit of its resisting power. When side by side with my own experiments I have observed what I admit to be the wonderful effects of antitoxine in the organism on the bacillus and toxine of diphtheria, I have, nevertheless, felt that protonuclein was as far superior to it in pathological results as the whole realm of pathology is greater than a single disease.

And now we come to the question of practical interest to the general profession, "How is it possible to extract this delicate substance from the animal tissues?" and its corollary, "What are the methods used to preserve its cellular activity?"

There are three forms of nuclein material now before the profession.

1. Nuclein made from yeast.

2. Another preparation of nuclein taken from the animal organism by chemical methods.

3. The third form, protonuclein, is a product taken directly from the lymphoid tissues of the healthy animal, the thyroid and thymus glands, the brain substance—within the area in and about the corpora quadrigemina, the pituitary body and pineal gland—the pancreas, spleen and liver. No chemicals are used in this process, the methods of extraction being purely physical, and the protonuclein is kept active by an investment of gum benzoin and milk sugar, which preserves it indefinitely, just as the germ of a grain of corn is kept potentially active by its environment. The activity of the protonuclein may be easily shown by dissolving some of the powder in distilled water. After the sediment has settled, draw off the supernatant fluid and apply a drop of it to a drop of freshly-drawn blood. You will see a most beautiful physiological panorama, instantaneous photographs of which I have here for your inspection. Protonuclein is richer in nitrogen than the ordinary nuclein of the text-books. Its formula, as far as it is possible to be chemically accurate in quantitative analysis, is $C_{29}\,H_{49}\,N_{10}\,P_5\,O_{32}$, differing by about one equivalent of nitrogen. It will be noticed how rich in phosphorus this wonderful physiological agent is.

So much therefore for its preparation and extraction. The most important factor in the problem is the answer to the questions, "What will it do?" "What can it cure?" "What will it prevent?" in the great battle between science and death. Were I to give free range to my own confidence in the therapeutic power of protonuclein as observed from day to day for the last six months, under the most favorable circumstances and under the direction of experienced and authoritative clinicians, you would discredit even the demonstrations of this report. But if you will consider for a moment what a sweeping therapeutic power must belong to any agent which is the normal tissue-builder of the organism and the direct antagonist of its invading toxic germs, you will see how difficult it is to limit its indication as a therapeutic agent.

Its most pronounced results have been observed in tuberculosis, sarcoma, diphtheria, tonsillitis, and la grippe. In the hospitals in New York it has been used with general success in the following diseases, besides those already mentioned: Abscess, anæmia (pernicious), Bright's disease, carcinoma, colds, malaria, tuberculosis of bladder, ulcers, and many others.

As to dose and mode of administration, I subjoin to this paper full

directions, which have been carefully prepared from the closest clinical observations.

Nothing has been left undone to thoroughly test the practical truth of what has theoretically been claimed for protonuclein as a therapeutic power. I believe with others even more conservative and less sanguine than I, that it will mark an era in therapeutics. Such relationship between the pabulum and the individual ti-sue-cell of the various structures of the body, seems to be the very last analysis of function in the human organism. Indeed, it has been said by one who occupies a high position as a medical teacher: "I feel assured that protonuclein is to fill a most important place in the therapeutic resources—perhaps the most important."

Up to the time when therapy began to look to physiology for help, our whole system was a vast accumulation of clinical reports without one iota of determining philosophy—a vast labyrinth without an Ariadne thread to guide the returning footsteps of our reason. I doubt not that before the close of the nineteenth century our therapists will look back upon the thousands of agents vaunted in the cure of disease las the modern soldier gazes upon the spear and shield of ancient Greece and Rome. The simplification of physiological methods has been followed most naturally by the use of those physiological principles of therapy upon which the normal curative conditions of the organism depend, and without which no scientific system of therapeutics could ever be formed.

Tendon Grafting.—A new operation for deformities following infantile paralysis. At the meeting of the New York Medical Association, October 15th, 1895 (*Medical Record*, October 26th), Dr. Milliken presented a boy eleven years of age, upon whom twenty months before he had successfully grafted part of the extensor tendon of the great toe into the tendon of the tibialis anticus muscle, the latter having been paralyzed since the child was eighteen months old. The case which was presented showed the advantages of only taking part of the tendon of a healthy muscle, which was made to carry on the function of its paralyzed associate without in any way interfering with its own work. The brace which had been worn since two years of age was left off, the patient walked without a limp, the talipes valgus was entirely corrected and the boy had become quite an expert roller skater. Dr. Milliken predicts a great field for tendon grafting in these otherwise hopeless cases of infantile paralysis, who heretofore have been doomed to the wearing of braces all their lives.

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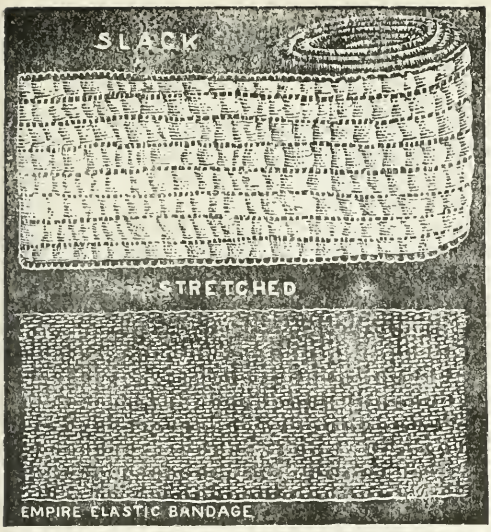

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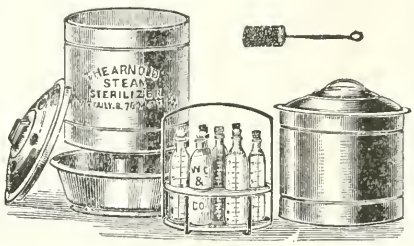

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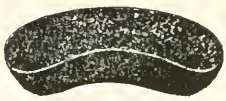

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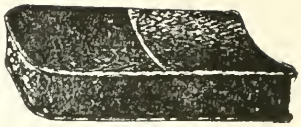

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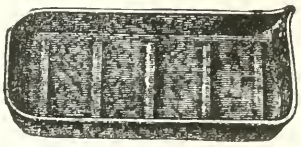

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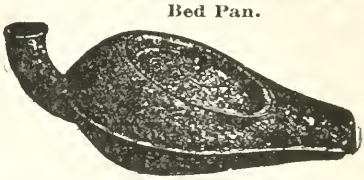

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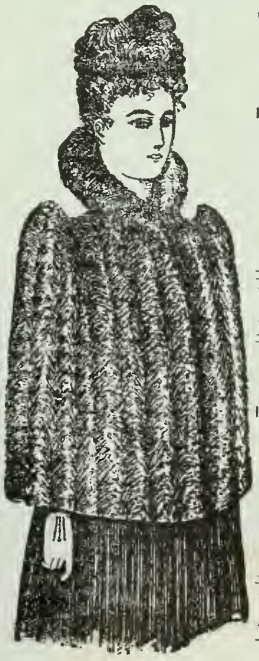

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